

TANGIBLE RESULT #9

Be a Good Steward of Our Environment



MDOT will be accountable to customers for the wise use of resources and impacts on the environment when designing, building, operating and maintaining a transportation system.

RESULT DRIVER:

Dorothy Morrison

The Secretary's Office (TSO)

TANGIBLE RESULT DRIVER:

Dorothy Morrison
The Secretary's Office (TSO)

PERFORMANCE MEASURE DRIVER:

Sonal Ram
State Highway Administration (SHA)

PURPOSE OF MEASURE:

To evaluate the health of the Chesapeake Bay by measuring how well MDOT is achieving compliance with impervious surface restoration as required by the National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) permit.

FREQUENCY:

Annually (in October)

DATA COLLECTION METHODOLOGY:

MDOT is tracking all Bay restoration projects and impervious surface treatment associated with those projects to determine overall progress toward the 20 percent goal during their five-year permit term.

NATIONAL BENCHMARK:

N/A

PERFORMANCE MEASURE 9.1

Water Quality Treatment to Protect and Restore the Chesapeake Bay

The fastest growing source of pollution in the Chesapeake Bay is stormwater runoff. Urbanization intensifies runoff by increasing paved surfaces and decreasing areas where rainfall can seep into the ground. Stormwater runoff increases delivery of pollutants including trash, organic debris, and sediment from impervious areas to urban streams.

Restoration efforts for 20 percent of MDOT's existing impervious surfaces will increase infiltration and reduce stormwater runoff. MDOT uses restoration practices such as installing new and upgrading existing stormwater management facilities, stream restoration, tree planting, and operations like street sweeping and inlet cleaning. This will improve conditions in urban streams, and reduce pollution in the Chesapeake Bay.

Chart 9.1.1 compares the impervious restoration accomplished by each TBU with the remaining acreage to be treated to meet the 20 percent restoration goal.

Approaching the 20 percent restoration requirements with a holistic one-MDOT strategy will include:

- Increased collaboration and data sharing between TBUs;
- Intelligent analysis of cost and restoration strategy to determine the most economical opportunities for impervious restoration across all of MDOT; and
- Close coordination and collaboration to ensure all TBUs are adequately tracking and implementing Bay restoration projects and impervious surface treatment.

PERFORMANCE MEASURE 9.1

Water Quality Treatment to Protect and Restore the Chesapeake Bay

Chart 9.1.1: MDOT Impervious Restoration in Acres YTD

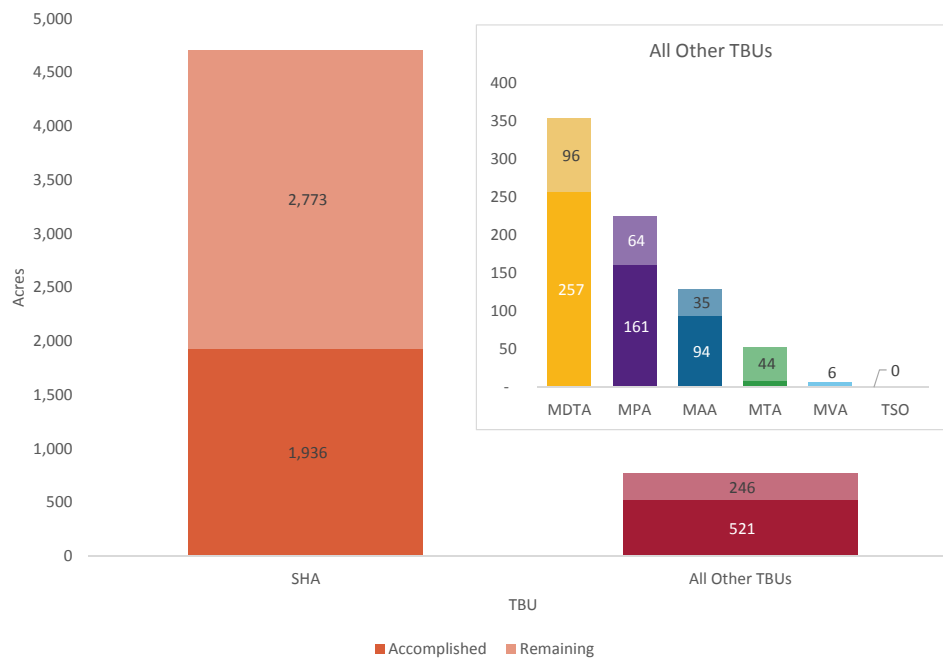
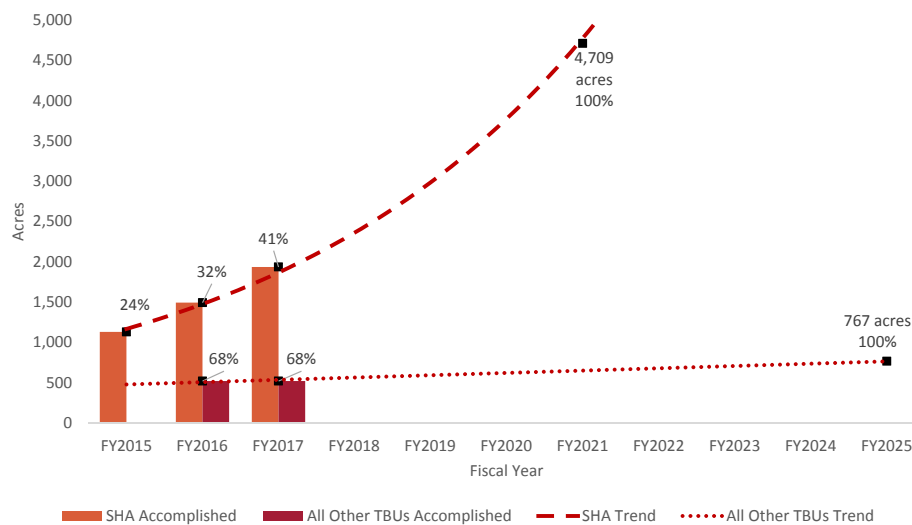


Chart 9.1.2: MDOT Impervious Restoration Trend FY2015-FY2025



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TANGIBLE RESULT DRIVER:

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The Secretary's Office (TSO)

PERFORMANCE MEASURE DRIVER:

Paul Truntich Jr.
Maryland Transportation Authority (MDTA)

PURPOSE OF MEASURE:

To track overall fuel economy of fleet vehicles and ensure better air quality through the use of State vehicles. It is important to track miles per gallon in a meaningful manner to ensure that State vehicles are fuel efficient and not detrimental to air quality. Fuel economy data will be used to evaluate driving patterns as well as when the procurement of new fleet vehicles is considered.

FREQUENCY:

Annually (in April)

DATA COLLECTION METHODOLOGY:

Fleet MPG data will be obtained from the State of Maryland's fuel service vendor.

NATIONAL BENCHMARK:

N/A

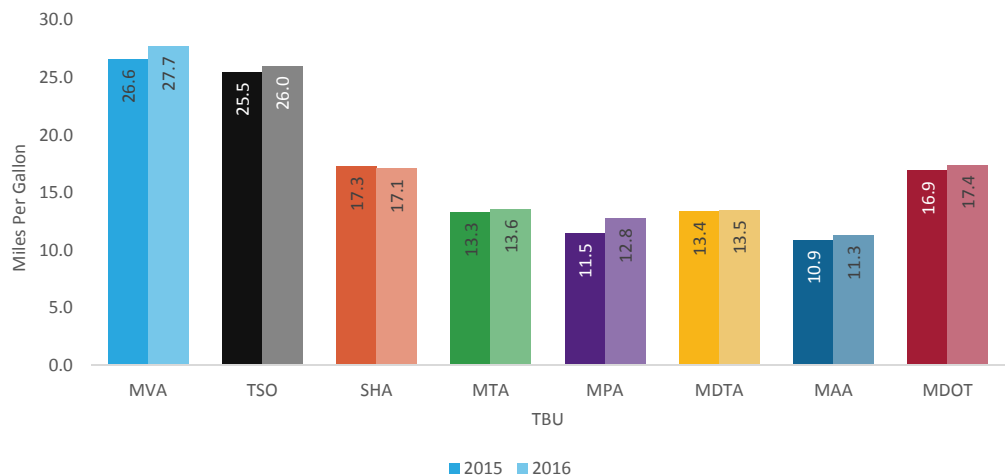
PERFORMANCE MEASURE 9.2A

Fuel Efficiency: Miles Per Gallon

Reduced fuel costs and conservation of petroleum-based resources are the direct results of a more fuel efficient fleet (as determined through increases in vehicle miles per gallon calculations). Efforts with Mansfield Oil Company (statewide fueling vendor) have resulted in developing a means of tracking miles per gallon (MPG) data for the light-duty fleet throughout all TBUs. MPG data for CY2015 and CY2016 has been calculated and presented in Chart 9.2A.1. Although data is only presented for two years, fuel efficiency has increased by 0.5 MPG MDOT-wide from 2015 (16.9 MPG) to 2016 (17.4 MPG).

Vehicle replacement practices represent the largest factor affecting change to this measure. At pre-determined age or mileage thresholds, fleet vehicles are replaced. Since the presumption is that newer models are more fuel efficient than their predecessors, MPG calculations for each TBU and the MDOT-wide should increase from year to year through fleet replacement activities. However, in addition to fleet replacement, strategies such as encouraging carpooling to meetings and other functions and modifying State vehicle purchasing contract requirements are being evaluated as additional means of improving fleet MPG.

Chart 9.2A.1: MDOT TBU Light-Duty Vehicle Average MPG CY2015-CY2016



TANGIBLE RESULT DRIVER:

Dorothy Morrison
The Secretary's Office (TSO)

PERFORMANCE MEASURE DRIVER:

Paul Truntich Jr.
Maryland Transportation Authority (MDTA)

PURPOSE OF MEASURE:

To track overall fuel consumption of fleet vehicles as well as fixed-equipment in an effort to use less of our resources with State vehicles and equipment. Consumption patterns will be evaluated for improving fuel efficiency and shifting towards use of renewable fuels.

FREQUENCY:

Annually (in October)

DATA COLLECTION METHODOLOGY:

Fleet vehicle data will be obtained from the State fuel service vendor. Fixed-equipment data will be supplied from Fleet and Facility Managers at the TBUs.

NATIONAL BENCHMARK:

N/A

PERFORMANCE MEASURE 9.2B**Fuel Efficiency: Total Gallons Consumed**

Analyzing fuel consumption patterns enables fleet and facility managers to budget more effectively and use resources more efficiently. This data also will be beneficial as fleet acquisition purchases and facility heating upgrades are considered. Additionally, identifying opportunities for reducing fuel consumption not only benefits the environment via resource conservation and reduced emissions, but also results in true cost-savings through reduced fuel costs.

While ultra-low sulfur diesel continues to be the most consumed fuel for fiscal years FY2014-FY2017, a distinct reduction (approximately 198,000 gallons) in consumption was noted from FY2016 to FY2017. This reduction is attributed to the MTA's procurement of 172 clean diesel busses which replaced older, less fuel-efficient models.

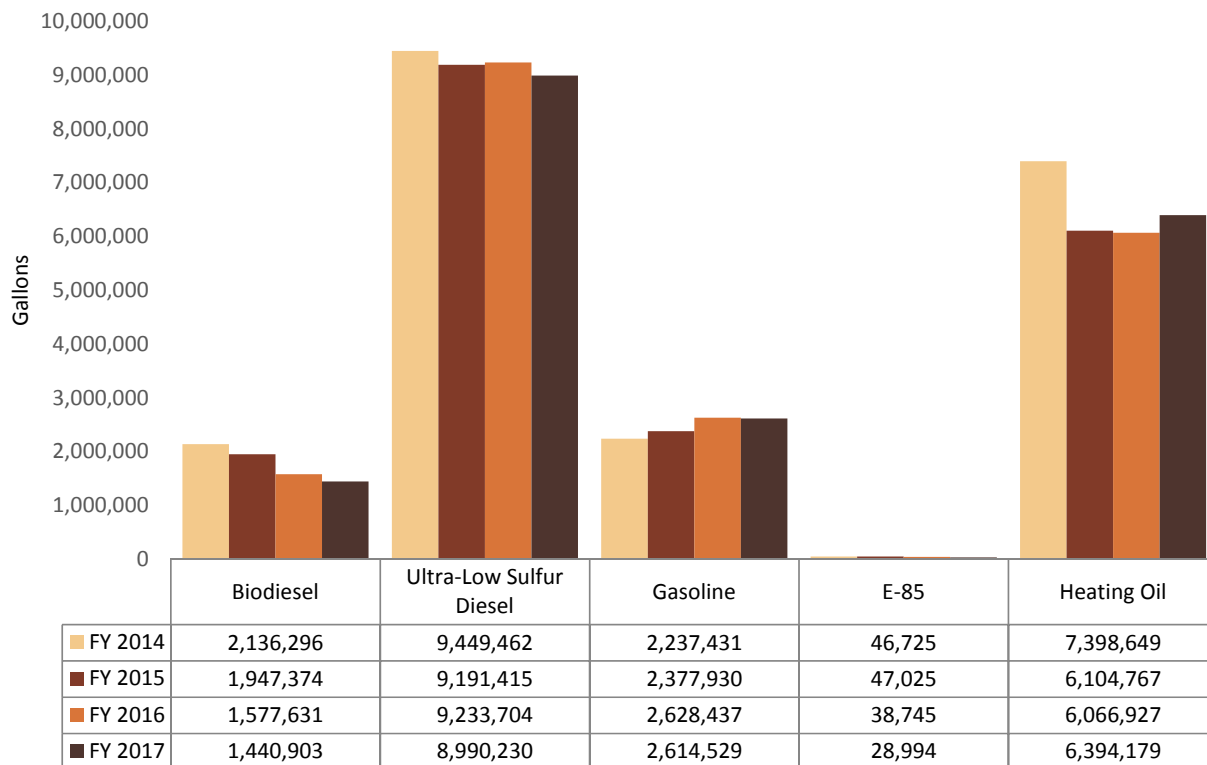
Heating oil consumption experienced a slight increase from FY2016 to FY2017. A portion of the increase is attributed to procurement strategies several TBUs used to purchase fuel where some were able to defer or minimize purchases during FY2016, but were required to make greater purchases in FY2017 to maintain appropriate on-hand fuel quantities. Furthermore, the inverse relationship between biodiesel and gasoline continued its trend in FY2017 as fleet managers continued to transition from diesel to gasoline powered vehicles.

The consumption of E-85 continued its downward trend in FY2017. As this is a renewable energy source, the desired outcome would be to achieve an overall increase in consumption. As an organization, MDOT needs to evaluate its overall commitment towards E-85 and possibly institute an overarching policy regarding its use throughout the TBUs.

PERFORMANCE MEASURE 9.2B

Fuel Efficiency: Miles Per Gallon

Chart 9.2B.1: Total Gallons of Fuel Consumed FY2014-FY2017



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TANGIBLE RESULT DRIVER:

Dorothy Morrison
The Secretary's Office (TSO)

PERFORMANCE MEASURE DRIVER:

Hargurpreet Singh, P.E.
Motor Vehicle Administration (MVA)

PURPOSE OF MEASURE:

To track the percentage of waste diverted from the landfill or incineration through recycling.

FREQUENCY:

Annually (in April)

DATA COLLECTION METHODOLOGY:

Maryland Department of the Environment All State Organization Recycling (All StAR) reporting.

NATIONAL BENCHMARK:

N/A

PERFORMANCE MEASURE 9.3

Percent of Maryland Recycling Act Materials Recycled

Recycling conserves resources, saves energy, reduces greenhouse gas emissions, reduces the amount of waste sent to landfills, reduces carbon footprint and helps protect the environment.

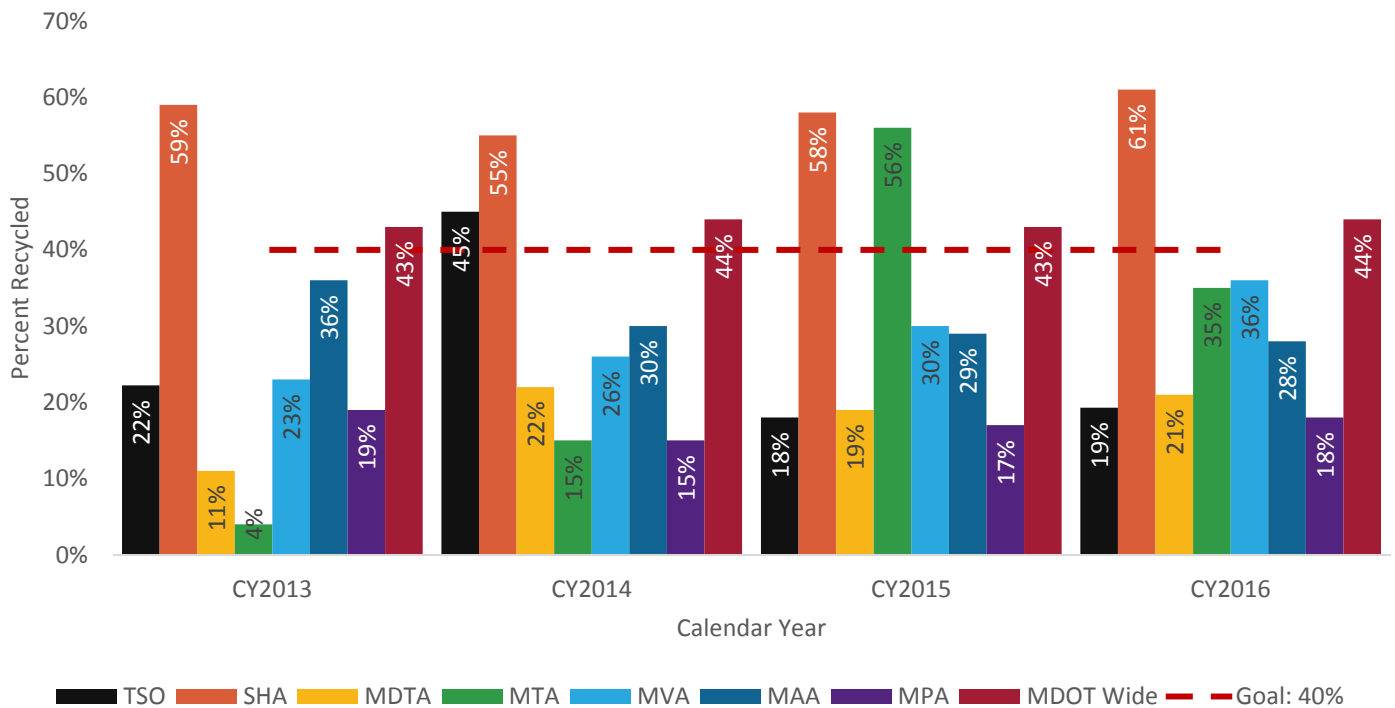
It also demonstrates that MDOT is in compliance with the State of Maryland established recycling and waste reduction goals. And, it is the Right Thing to Do!

Currently, MDOT meets the 40 percent goal set by the Maryland State Legislature. To continue to meet and exceed State legislative recycling goals, each MDOT TBU continues to provide awareness training and to evaluate dumpster size and frequency of trash collection services.

PERFORMANCE MEASURE 9.3

Percent of Maryland Recycling Act Materials Recycled

Chart 9.3.1: Percent of Waste Recycled by TBU CY2013-CY2016



TANGIBLE RESULT DRIVER:

Dorothy Morrison
The Secretary's Office (TSO)

PERFORMANCE MEASURE DRIVER:

Barbara McMahon
Maryland Port Administration (MPA)

PURPOSE OF MEASURE:

To reduce TBU impact on solid waste landfill through recycling/ reuse of steel, asphalt and concrete.

FREQUENCY:

Annually (in April)

DATA COLLECTION METHODOLOGY:

The data collection methodology will include disposal weights by each TBU's Facility Maintenance and Engineering Departments. The data are and/or should be reported on the annual Non-Maryland Recycling Act Report.

NATIONAL BENCHMARK:

N/A

PERFORMANCE MEASURE 9.4

Recycled/Reused Materials from Maintenance Activities and Construction/ Demolition Projects

MDOT is committed to reducing its impact on solid waste, non-hazardous landfills, potentially resulting in reduction of the number of waste disposal facilities in Maryland as stated in the Maryland Department of the Environment's "Zero Waste" Action Plan. The TBUs established plans to recycle and/or reuse their solid waste: steel, asphalt and concrete. These materials are to be collected, weighed and recycled/reused. Benefits include saving energy and natural resources, preserving the capacity of landfills, reducing waste disposal costs, generating revenue for materials and reducing pollutants generated by landfill process.

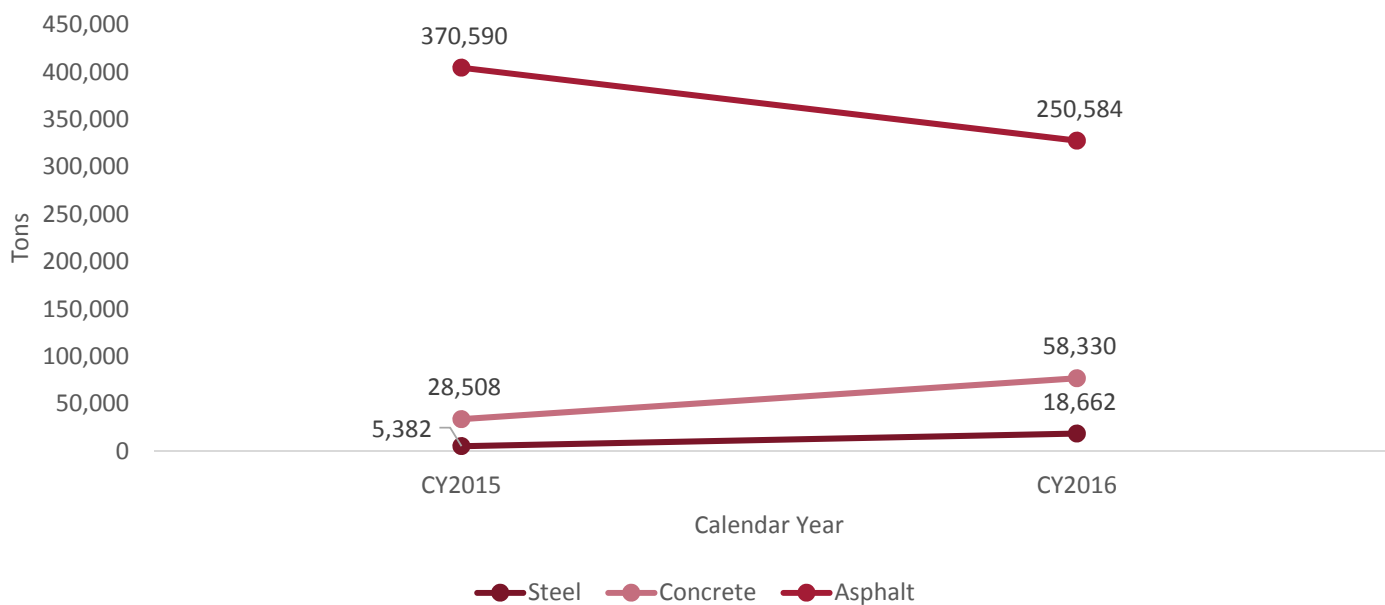
Due to the number and type of construction/demolition activities and projects, MDOT recognizes there may be variability among reporting periods and TBUs, but positive change can still occur by implementing some or all the following:

- Establish central data collection mechanisms and procedures in each TBU.
- Require contractors to segregate, collect, weigh and recycle these materials and provide information to the TBU.
- Ensure commitment to the goal and its positive impact on the environment by making employees and contractors aware of this PM.

PERFORMANCE MEASURE 9.4

Recycled/Reused Materials from Maintenance Activities and Construction/ Demolition Projects

Chart 9.4.1: Recycled/Reused Materials from Maintenance Activities & Construction/Demolition Projects, CY2015-CY2016



TANGIBLE RESULT DRIVER:

Dorothy Morrison

The Secretary's Office (TSO)

PERFORMANCE MEASURE DRIVER:

Laura Rogers

The Secretary's Office (TSO)

PURPOSE OF MEASURE:

To reduce our consumption of conventional energy through efficiency measures and renewable energy sources.

FREQUENCY:

Quarterly

DATA COLLECTION METHODOLOGY:

Data for MDOT's electricity usage collected by EnergyCAP will be evaluated. Data for energy efficiency measures and renewable energy sources utilized by MDOT will be collected from the TBU Energy Managers. Emissions calculated based on the amount of energy used and regional energy mix.

NATIONAL BENCHMARK:

Renewable Energy Consumption as a Share of State Total (2014): Oregon, 49.3 percent; Washington, 47.1 percent; Maine, 38.3 percent

American Council for an Energy Efficient Economy ranked Maryland 9 in the 2016 State Energy Efficiency Scorecard. California and Massachusetts tied for number 1.

PERFORMANCE MEASURE 9.5

Energy Consumption

Reducing our conventional energy consumption through energy efficiency measures and use of renewable energy can generate revenue, save Maryland taxpayers money, and reduce harmful air emissions while also helping Maryland meet its clean energy and greenhouse gas reduction goals.

The desired trend for conventional electricity use, cost, and associated carbon dioxide equivalent (CO₂e) emissions is to decrease. In CY2017 (January-May), there was a decrease over CY2016 (January-May) in usage (2,228 megawatt hours), cost (\$866,000), and CO₂e emissions (1,374 metric tons). The desired trend for renewable energy generation, cost avoidance, and CO₂e emissions avoidance is to increase. In CY2017 (January-August), there was an increase over CY2016 (January-August) in generation (155 megawatt hours), cost savings (\$16,700), and CO₂e emissions avoidance (109 metric tons).

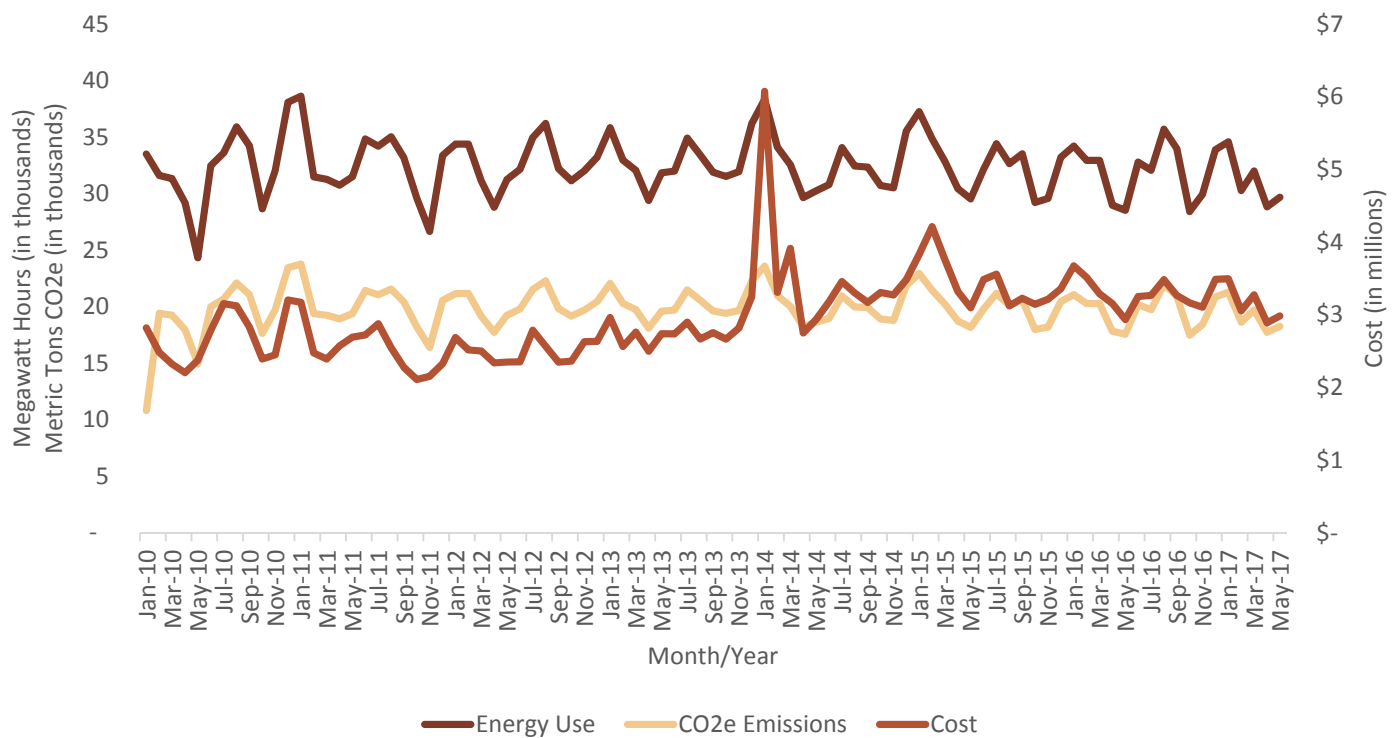
MDOT released a Renewable Energy Development Request for Proposal on June 20, 2017, and received proposals on August 17, 2017. MDOT will use the resulting Master Services Agreement(s) to develop solar renewable energy systems quickly and efficiently on MDOT properties throughout the State.

MDOT is undertaking many strategies to increase energy efficiency. Each TBU has completed a comprehensive Energy Plan that details its energy consuming entities, existing and future energy conservation strategies, and future energy conservation goals. Many of the energy conservation measures MDOT implements also realize secondary benefits, such as improved lighting quality, lower operation and maintenance expenses, increased life span of equipment, improved indoor air quality, and enhanced tenant comfort.

MDOT is expanding its services to meet the needs of its customers. The more people use MDOT facilities and the more these facilities increase in size to meet customer needs, the more energy is used. While the desired trend for energy consumption is to go down, simply looking at the amount of energy used does not give an accurate picture of MDOT's energy conservation efforts. For this reason, MDOT is working to develop a standardized Energy Use Index that considers energy use, square footage, and number of users. This Index will give MDOT a better baseline to work from and affect change.

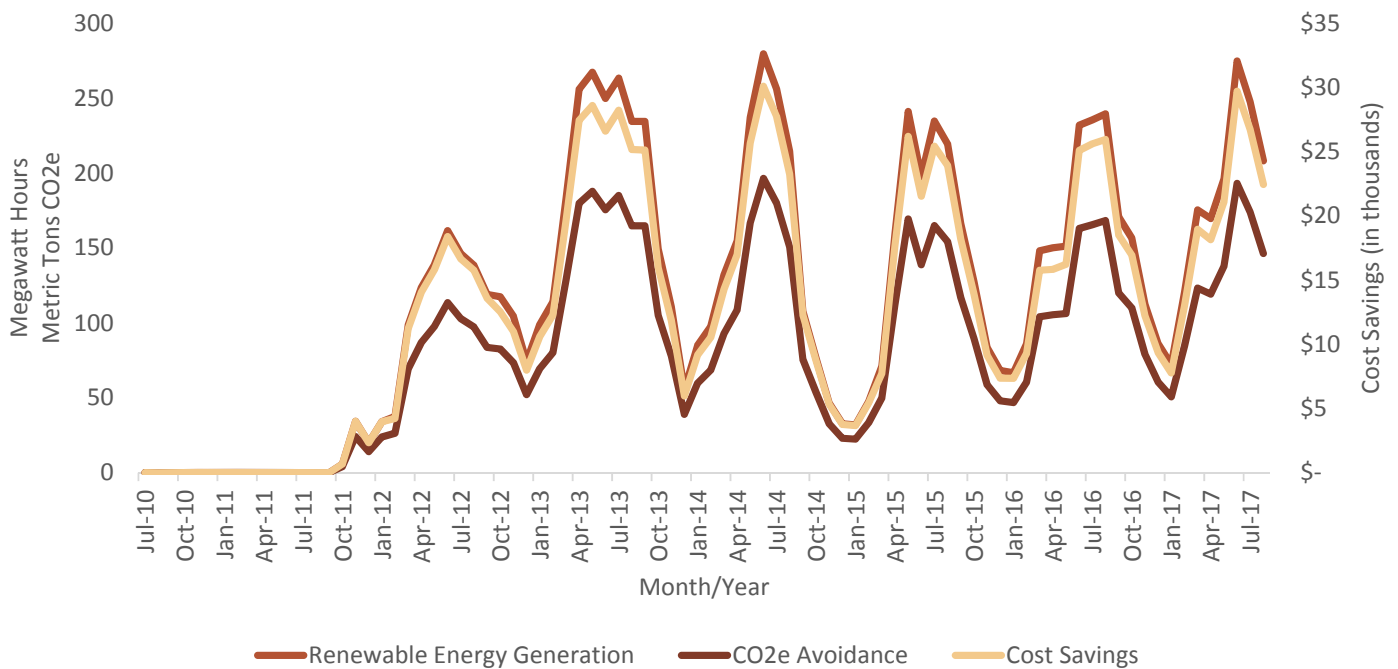
PERFORMANCE MEASURE 9.5
Energy Consumption

Chart 9.5.1: Total MDOT Conventional Energy Use, Cost & CO2e Emissions CY2010-YTD 2017



PERFORMANCE MEASURE 9.5 Energy Consumption

Chart 9.5.2: Total MDOT Renewable Energy Generation, Cost Savings & CO2e Avoidance CY2010-YTD 2017



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